At page 20, lines 15-22, please delete the entire paragraph and insert therefor the following:

--The GFP DNA-transferrin-polylysine viral complexes, prepared as described in Example 4 above, were delivered into the seminiferous tubules of three (3)-week-old B6D2F1 male mice. The DNA delivery by transferrin receptor-mediated endocytosis is described by Schmidt et al. and Wagner et al. (Schmidt et al., Cell 4: 41-51 (1986); Wagner, E., et al. PNAS (1990), (USA) 81: 3410-3414 (1990)). In addition, this delivery system relies on the capacity of adenoviruses to disrupt cell vesicles, such as endosomes and release the contents entrapped therein. The transfection efficiency of this system is almost 2,000 fold higher than lipofection.--.

IN THE CLAIMS:

Please cancel Claims 1-134, without prejudice, as originally filed with parent application 09/191,920, and add the following new Claims 135-182 as being directed to the subject matter of designated claim Group II, which is herein elected.

--135.(New) A non-human transgenic vertebrate produced by the steps of:

(a) administering by injection into a testis of a male non-human vertebrate a transfection mixture comprising at least one polynucleotide encoding a gene product in operable linkage with a promoter, and at least one transfecting agent, other than a liposome/DNA complex, wherein said testis contains the germ cells of the male non-human vertebrate, and wherein said germ cells are selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa; and

(b) allowing the polynucleotide encoding a gene product to be taken up by, and released into, the germ cells so that the released polynucleotide is incorporated into the genome of the germ cells of said male non-human vertebrate.

136.(New) The non-human transgenic vertebrate of Claim 135, wherein the polynucleotide comprises at least one biologically functional gene.

137.(New) A progeny non-human transgenic vertebrate, carrying in its germ cells at least one xenogeneic polynucleotide sequence, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of Claim 135 with a female of the same species, and

selecting the bred progeny non-human transgenic vertebrate for the presence of the transfected xenogeneic polynucleotide.

All cont'd

138.(New) The progeny non-human transgenic vertebrate of Claim 137, being a male comprising native germ cells carrying in their genomes at least one xenogeneic polynucleotide.

139.(New) The non-human transgenic vertebrate of Claim 135, which is selected from the group consisting of mammals and birds.

140.(New) The progeny non-human transgenic vertebrate of Claim 137, which is selected from the group consisting of mammals and birds.

141.(New) The non-human transgenic vertebrate of Claim 135, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, farm and marine mammals, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

142.(New) The non-human transgenic vertebrate of Claim 135, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

143.(New) The non-human transgenic vertebrate of Claim 135, wherein the mammal is a farm or marine animal.

144.(New) The vertebrate of Claim 135, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.

145.(New) A transgenic germ cell, obtained from the non-human transgenic vertebrate of Claim 135.

146.(New) A transgenic germ cell, obtained from the progeny non-human transgenic vertebrate of Claim 137.

147.(New) A transgenic non-human vertebrate male germ cell, obtained by a method comprising performing the method of Claim 135; and then collecting male germ cells produced by the male non-human vertebrate.

148.(New) A transgenic non-human vertebrate male germ cell, obtained by a method comprising performing the method of Claim 137; and then collecting the germ cells produced by the male progeny non-human transgenic vertebrate.

149.(New) Non-human vertebrate semen, comprising the germ cell of Claim 147.

150.(New) Non-human vertebrate semen, comprising the germ cell Claim 148.

151.(New) A method of producing a non-human vertebrate animal line comprising native germ cells carrying in their genome at least one xenogeneic polynucleotide, comprising

breeding of the progeny non-human transgenic vertebrate of Claim 137, with a member of the opposite sex of the same species; and selecting progeny for the presence of said polynucleotide.

152.(New) A transgenic non-human vertebrate, comprising germ cells carrying in their genomes at least one xenogeneic polynucleotide, said transgenic non-human vertebrate having received an injection in its testis of male germ cells comprising at least one polynucleotide encoding a desired trait or product and at least one polynucleotide encoding a genetic selection marker, said male germ cells comprising the polynucleotide being isolated or selected from a donor male non-human vertebrate with the aid of the selection marker.

153.(New) The transgenic non-human transgenic vertebrate of Claim 152, wherein the polynucleotide comprises at least one biologically functional gene.

154.(New) A progeny non-human transgenic vertebrate, carrying in its germ cells at least one xenogeneic polynucleotide sequence, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of Claim 152 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the transfected xenogeneic polynucleotide.

155.(New) The progeny non-human transgenic vertebrate of Claim 154, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

156.(New) The non-human transgenic vertebrate of Claim 152, which is selected from the group consisting of mammals and birds.

157.(New) The progeny non-human transgenic vertebrate of Claim 154, which is selected from the group consisting of mammals and birds.

158.(New) The non-human transgenic vertebrate of Claim 152, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

159.(New) The non-human transgenic vertebrate of Claim 152, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

160.(New) The non-human transgenic vertebrate of Claim 152, wherein the mammal is a farm or marine animal.

161.(New) The vertebrate of Claim 152, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.

162.(New) A transgenic germ cell, obtained from the non-human transgenic vertebrate of Claim 152.

163.(New) A transgenic germ cell, obtained from the progeny non-human transgenic vertebrate of Claim 154.

164.(New) A transgenic non-human vertebrate male germ cell, obtained by a method comprising performing the method of Claim 152; and then collecting male germ cells produced by the transgenic male non-human vertebrate.

165.(New) A transgenic non-human vertebrate male germ cell, obtained by a method comprising performing the method of Claim 154; and then collecting the germ cells produced by the male progeny non-human transgenic vertebrate.

166.(New) Non-human vertebrate semen, comprising the germ cell of Claim 164.

167.(New) Non-human vertebrate semen, comprising the germ cell Claim 165.

A4 cont'd

168.(New) A non-human transgenic vertebrate, or its progeny, comprising a native germ cell carrying in its genome at least one xenogeneic polynucleotide, said polynucleotide having been incorporated into the genome of said germ cell through the steps of:

(a) obtaining a maturing male germ cell from a non-human vertebrate;

(b) transfecting the germ cell in vitro with at least one polynucleotide encoding a desired trait in the presence of a gene delivery mixture comprising at least one transfecting agent, and optionally a polynucleotide encoding a genetic selection marker, at about or below the vertebrate's body temperature and for a transfection-effective period of time; and

allowing the polynucleotide encoding a desired trait to be taken up by, and released into the germ cell.

169.(New) The non-human transgenic vertebrate of Claim 168, wherein the polynucleotide comprises at least one biologically functional gene.

170.(New) The progeny non-human transgenic vertebrate of Claim 168, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

171.(New) The non-human transgenic vertebrate of Claim 168, which is selected from the group consisting of mammals and birds.

172.(New) The progeny non-human transgenic vertebrate of Claim 170, which is selected from the group consisting of mammals and birds.

173.(New) The non-human transgenic vertebrate of Claim 168, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

174.(New) The non-human transgenic vertebrate of Claim 168, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

175.(New) The non-human transgenic vertebrate of Claim 168, wherein the mammal is a farm or marine animal.

176.(New) The vertebrate of Claim 168, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.